

REPPERGER RESEARCH INTERN PROGRAM

RESEARCH PROJECT #: AFRL-RHD-23-09

Correcting Color Using Machine Learning

PROJECT DESCRIPTION: Machine learning (ML) is a powerful tool that can be used to provide predictive outcomes from experimental or measurement datasets. One area ripe for the development of ML algorithms is decision making for use in the area of color science. Color is important for conveying certain types of information, therefore, accurate color of objects in a complex scene must be correct. Using an existing database of calibrated images, students will develop machine learning algorithms and train them to correct the color appearance of targeted objects in a complex scene. Methods for machine learning include the use of classification, ensemble methods, dimensionality reduction, neural nets and deep learning, clustering.

ACADEMIC LEVEL: Bachelor's, Master's, PhD

DISCIPLINE NEEDED:

- Computer Science
- Data Science
- Electrical Engineering
- Vision Science
- Psychology

RESEARCH LOCATION: JBSA-Fort Sam Houston, San Antonio, Texas

RESEARCH MENTOR: Brenda Novar, MS
Engineering Management, Drexel University, 2010



Ms. Brenda Novar is a Research Electrical Engineer with the Bioeffects Division of the Airman Systems Directorate, Air Force Research Laboratory. She joined the group in 2008, providing engineering support to vision science research projects, conducting human use studies, and applying technical skillsets to the development and characterization of specialized optical systems. She also worked in the development of graphical user interfaces for the automation of instrument control and the acquisition of data. She served as the program manager for an advanced technology demonstration program for aircrew protective technologies. She currently serves as a project lead and primary investigator for research and modeling efforts that contribute to knowledge gaps in optical quality metrics for developmental eyewear. Research topics of current interest include artificial intelligence, machine learning, bio-inspired vision sensors and physiological control systems. *Photo courtesy of the U.S. Air Force Research Laboratory.*